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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,069	06/21/2001	Yuji Isoda	Q64937	5003

7590 12/26/2002

SUGHRUE MION ZINN MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213

EXAMINER

HO, ALLEN C

ART UNIT	PAPER NUMBER
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2882

DATE MAILED: 12/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/885,069

Applicant(s)

ISODA ET AL.

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60, 66, 126 and 132-152 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 60, 66, 126 and 132-152 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 148 is objected to because of the following informalities: "line" should be replaced by --surface--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 60, 126, 149, and 151 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohda (U. S. Patent No. 5,591,982) in view of Saotome (U. S. Patent No. 5,038,037), Nakamura *et al.* (U. S. Patent No. 5,427,858), and Takahashi *et al.* (U. S. Patent No. 4,535,238).

Kohda disclosed a radiation image read-out apparatus and method comprising: a light source for irradiating stimulating rays (13) onto an area of a stimuable phosphor sheet (11), on which a radiation image has been stored, the stimulating rays causing the stimuable phosphor sheet to emit light in proportion to an amount of energy stored thereon during its exposure to radiation, the stimuable phosphor sheet is permeable to the emitted light and the emitted light is received from the back surface of the stimuable phosphor sheet; two sensors (16a, 16b) located on the front and back surface sides of the stimuable phosphor sheet for receiving light, which is emitted from the front and the back of the stimuable phosphor sheet exposed to the stimuable

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rays, and performing photoelectric conversion of the received light; scanning means (12a) for moving the stimuable phosphor sheet with respect to the light source and the sensor; reading means (18) for successively reading outputs of the photoelectric conversion devices of the sensors in accordance with the movement.

However, Arakawa did not teach that: (1) the apparatus employ a line light source and line sensors for reading image stored in the stimuable phosphor sheet; and (2) the line light source is constituted of an organic EL device.

Saotome disclosed a radiation image read-out apparatus comprising two line light sources (621) and two line sensors (623) for reading data one line at a time.

Nakamura *et al.* disclosed an organic EL light source. The wavelength of the light source can be customized by changing the kinds of fluorescent organic solids of which the light-emitting layer is formed (column 1, lines 40-43).

Takahashi *et al.* taught that the emission intensity of the phosphor depends on the wavelength of the excitation light.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to: (1) employ a line light source and line sensors in a radiation image read-out apparatus, since reading an entire line at a time is much faster than scanning across a line as taught by Kohda, a person would be motivated to use a line light source and line sensors in order to expedite the time it takes to read the image; and (2) employ an organic EL device as a line light source in a radiation image read-out apparatus, since the stimulated emission of the phosphor depends on the wavelength of the stimulating light, a person would be motivated to

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employ an organic EL light source whose wavelength can be customized to induce optimal emission yield in the phosphor in order to enhance the signal to noise ratio in the image.

4. Claims 66, 132, 150, and 152 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohda (U. S. Patent No. 5,591,982) in view of Nakamura *et al.* (U. S. Patent No. 5,427,858) and Takahashi *et al.* (U. S. Patent No. 4,535,238).

Kohda disclosed a radiation image read-out apparatus and method comprising: a light source for irradiating stimulating rays (13) onto an area of a stimuable phosphor sheet (11), on which a radiation image has been stored, the stimulating rays causing the stimuable phosphor sheet to emit light in proportion to an amount of energy stored thereon during its exposure to radiation, the stimuable phosphor sheet is permeable to the emitted light and the emitted light is received from the back surface of the stimuable phosphor sheet; two sensors (16a, 16b) located on the front and back surface sides of the stimuable phosphor sheet for receiving light, which is emitted from the front and the back of the stimuable phosphor sheet exposed to the stimuable rays, and performing photoelectric conversion of the received light; scanning means (12a) for moving the stimuable phosphor sheet with respect to the light source and the sensor; reading means (18) for successively reading outputs of the photoelectric conversion devices of the sensors in accordance with the movement.

However, Arakawa did not teach that: (1) the apparatus employ a surface light source and area sensors for reading image stored in the stimuable phosphor sheet; and (2) the surface light source is constituted of an organic EL device.

Nakamura *et al.* disclosed an organic EL light source, which could be used as a surface light source (column 3, lines 23-28). The wavelength of the light source can be customized by

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changing the kinds of fluorescent organic solids of which the light-emitting layer is formed (column 1, lines 40-43).

Takahashi *et al.* taught that the emission intensity of the phosphor depends on the wavelength of the excitation light.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to: (1) employ a surface light source and area sensors in a radiation image read-out apparatus, since reading an entire area at a time is much faster than scanning across a line as taught by Kohda, a person would be motivated to use a surface light source and area sensors in order to expedite the time it takes to read the image; and (2) employ an organic EL device as a surface light source in a radiation image read-out apparatus, since the stimulated emission of the phosphor depends on the wavelength of the stimulating light, a person would be motivated to employ an organic EL light source whose wavelength can be customized to induce optimal emission yield in the phosphor in order to enhance the signal to noise ratio in the image.

5. Claims 133-144 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohda (U. S. Patent No. 5,591,982) in view of Saotome (U. S. Patent No. 5,038,037), Nakamura *et al.* (U. S. Patent No. 5,427,858), and Takahashi *et al.* (U. S. Patent No. 4,535,238) as applied to claims 60, 66, 126, and 132 above, and further in view of Fukai *et al.* (U. S. Patent No. 4,914,294) and Watanabe *et al.* (U. S. Patent No. 4,831,626).

Kohda in combination with Saotome, Nakamura *et al.*, and Takahashi *et al.* disclosed a radiation image read-out apparatus and method employing an organic EL device as a light source.

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However, these references do not teach that the radiation image read-out apparatus further comprises: a monitoring means for monitoring an intensity of the stimulating rays emitted from the organic EL device; a modulating means for modulating the emission intensity of the organic EL device in accordance with the monitored intensity, wherein the emission intensity of the organic EL device is modulated to be equal to a predetermined value.

Fukai *et al.* disclosed a radiation image read-out apparatus and method comprising a monitoring means (26) for monitoring an intensity of the stimulating rays emitted from the light source. The image signal is corrected based on the output of the monitoring means (column 6, lines 37-46).

Watanabe *et al.* disclosed a monitoring means (6) and a modulating means (3) for modulating the emission intensity of a light source in a feedback loop (Fig. 3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a monitoring means and a modulating means for modulating the emission intensity of the light source in a feedback loop, since a person would be motivated to maintain the intensity of the light source at a predetermined value in order to produce a consistent image.

6. Claims 145-148 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohda (U. S. Patent No. 5,591,982) in view of Saotome (U. S. Patent No. 5,038,037), Nakamura *et al.* (U. S. Patent No. 5,427,858), and Takahashi *et al.* (U. S. Patent No. 4,535,238) as applied to claims 60, 66, 126, and 148 above, and further in view of Schrof *et al.* (U. S. Patent No. 5,949,532).

Kohda in combination with Saotome, Nakamura *et al.*, and Takahashi *et al.* disclosed a radiation image read-out apparatus and method.

However, these references do not teach that the apparatus further comprises a mirror disposed to direct light from the light source to a surface of the stimuable phosphor sheet, the mirror transmitting light emitted from the stimuable phosphor sheet, the mirror causing at least partial optical overlap of the emitted light and light from the light source.

Schrof *et al.* disclosed an apparatus for conducting Raman measurement, wherein a mirror (12) disposed to direct light from the light source (11) to a surface of a sample (20), the mirror transmitting light emitted from the sample, and at least part of an optical path (between the mirror and the sample) of the stimulating rays from the light source to the sample and at least part of an optical path of the emitted light from the sample to a detector (18) overlap each other.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to arrange for the incident stimulating rays and the emitted light to share part of their optical paths, since a person would be motivated to simplify the optics by reducing the number of optical components used.

Allowable Subject Matter

7. The indicated allowability of claims 133-148 in the previous office action is withdrawn in view of the new ground(s) of rejection.

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Response to Arguments

8. Applicant's arguments with respect to claims 60, 66, 126, and 132-152 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- (1) Iwabuchi (U. S. Patent No. 6,204,495 B1) describes an image reading method and apparatus comprising a light-permeable phosphor sheet.
- (2) Suzuki (U. S. Patent No. 5,880,476) describes a light-permeable radiation image storage panel.
- (3) Arakawa *et al.* (U. S. Patent No. 5,877,508) describe a light-permeable radiation image storage panel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (703) 308-6189. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached at (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Allen C. Ho
Examiner
Art Unit 2882

ACH
December 17, 2002


ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800